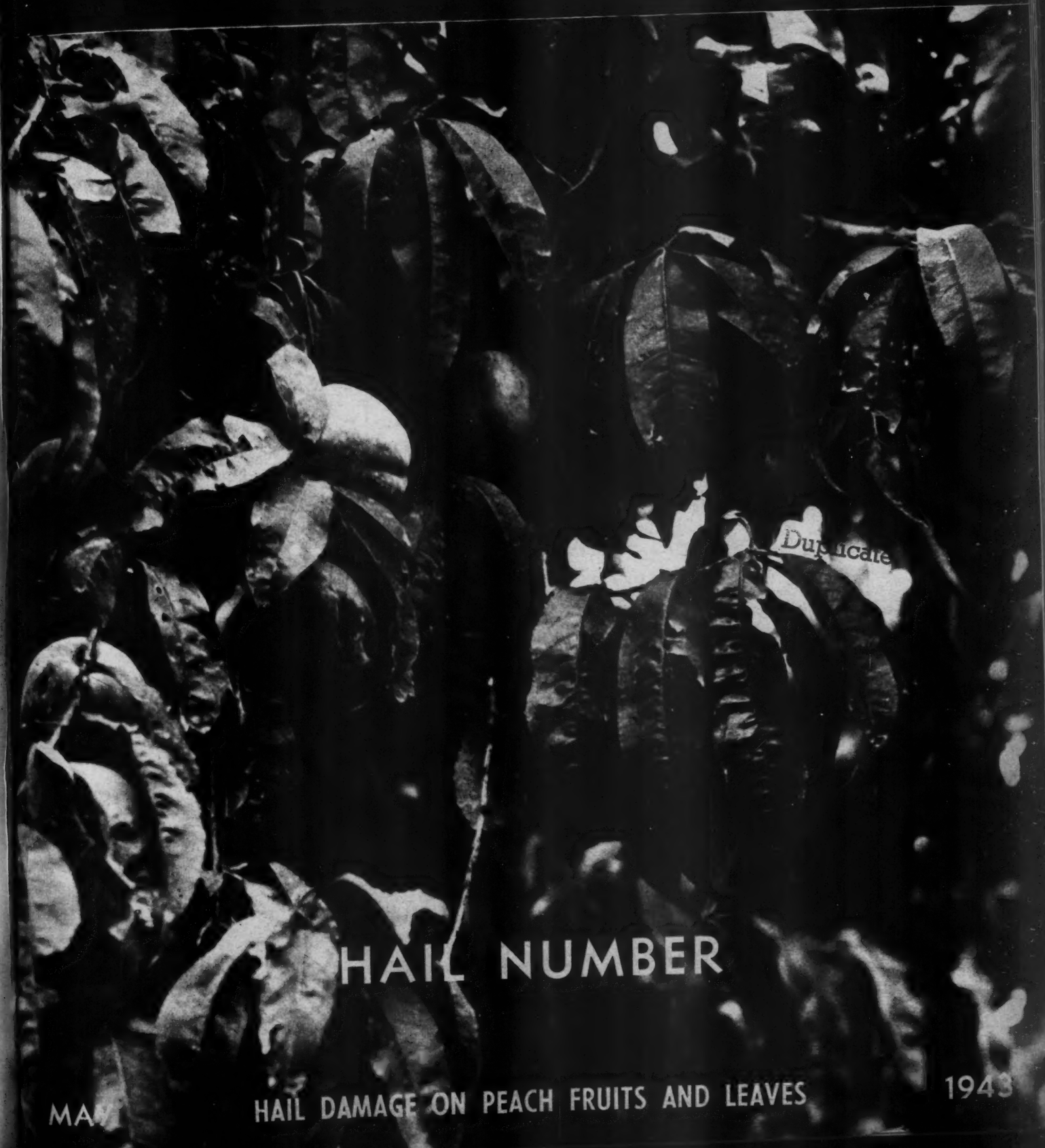


U.S. DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY
PLANT OR INJURY



HAIL NUMBER

MAV

HAIL DAMAGE ON PEACH FRUITS AND LEAVES

1943



“No good to you— or to Uncle Sam”

Wheels out of line—undue tire wear—suddenly, BLOWOUT! *Then what do you do, Mr. Driver? BETTER TO HAVE HAD THE WHEELS ALIGNED!*

Burnt-out lamp bulb—faulty vision—SMASH-UP by night! *Costly to repair, even if possible, Car Owners! BETTER TO HAVE KEPT THAT HEAD-LIGHT GLOWING!*

A new battery—new spark plugs—or other replacement—before it's TOO LATE! *Perhaps too late to get replacement at all, Friend Motorist. BETTER WHAT YOU NEED—NOW—THAN “TOO LITTLE, TOO LATE!”*

Yes, conditioning, adjusting, repairing, replacing—or, in due time, COLLAPSE! *Don't “lock the barn door after the horse is stolen.” BETTER THE OUNCE OF PREVENTION THAN THE POUND OF CURE—IF CURABLE!*

There is the simple logic of car conservation. . . . You *must* take care of your car—have frequent, skillful, thorough car service—in order to save your car for yourself and your family, and to preserve America's vital transportation.

Chevrolet dealers are equipped, skilled, and ready to service any car of any make. See *your* Chevrolet dealer. . . . Let him help you make your car outlast the war.

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CHEVROLET
SERVICE
save your car

★ ★ ★ **BUY U. S. WAR BONDS AND STAMPS** ★ ★ ★

SEE YOUR LOCAL CHEVROLET DEALER

WINTER INJURY

LAST month AMERICAN FRUIT GROWER published brief summary comments on the extent of winter injury in the states of New Hampshire, Indiana, Michigan, and Illinois, giving special reference to the peach crop which was the most severely affected by bitter and late winter temperatures.

Because injury from the winter of 1942-43 was unusually heavy, and as further reports from other states have been received, additional results of winter injury are printed here.

The loss of any part of 1943's fruit crop is lamentable today in the face of the Nation's “all-out” effort to produce the greatest amounts of fruits and foodstuffs possible this year in successful furtherance of the war.

CONNECTICUT

By H. A. Rollins
University of Connecticut

NEW England orchards have been exposed to a severe winter with two freezes which, according to the official weather records at the University of Connecticut, were 17 degrees below zero on December 21, and 19 degrees below on February 15. In general, the temperatures in the winter of 1942-43 were not as low as those during the winter of 1933-34 when Baldwin apple trees were killed.

From general reports it was evident that about one-half of the peach buds was damaged by the December freeze of this year. Following the February freeze, the only live peach buds that have been found in the State are in southern Connecticut near Long Island Sound where the temperatures, probably, were not lower than 10 degrees below zero.

It is difficult to estimate the full extent of fruit tree damage at this time, but considerable wood browning has been observed in peach trees. Young, strong-growing and old, weak-growing peach trees have been injured most seriously.

It is generally agreed in southern New England that an abundance of leaf area will help these peach trees to recover. Light pruning has been recommended for the injured peach trees.

OHIO

By Frank H. Beach
Ohio State University

FOLLOWING a survey of peach crop prospects, it appears that winter temperatures of the past season have done no serious injury and, with favorable weather, the Ohio peach crop may exceed last year's
(Continued on page 4)

THE SPECTRE THAT HAUNTS THE FOOD FRONT



It has been said that a 640-acre section may harbor as many insects as there are human beings in the world. In addition to insects there are numerous fungous diseases that are equally destructive. These pests constitute a serious threat against our vital food supply.

PEST CONTROL helps reduce this costly waste . . . properly timed spraying and dusting, using efficient

methods and effective insecticides and fungicides. For example—

GRASSELLI LEAD ARSENATE. Heavy lead with high killing power. Works easily through long lines. Compatible with summer oils. No waste in tank.

MUREXFORM LEAD ARSENATE. Stays in suspension. Strength uniform throughout spraying operation. Covers completely. Mixes readily with Lime Sulfur.

SULFORON WETTABLE SULFUR. Micro-fine. Mixes readily, compatible with arsenicals. Wide cover-

ing, non-injurious to foliage. Use as spray or dust.

COPPER-A COMPOUND. Safe to use on plants sensitive to Bordeaux mixture. Mixes readily with water, gives uniform spray. Can be used as dust.

In these critical times du Pont plants are producing every possible pound of needed pest control chemicals. Spray or dust in accordance with Federal and State recommendations. Grasselli Chemicals Dept., E. I. du Pont de Nemours & Co. (Inc.), Wilmington, Delaware.



Write for your copy of the new "Spraying and Dusting Schedule"—just released!

*MUREXFORM Lead Arsenate
*GRASSELLI Lead Arsenate
*SULFORON Wettable Sulfur
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*LORO Contact Insecticide

Lime Sulfur
Calcium Arsenate
Spray Oils
Copper Sulfate
Sulfur

Paris Green
Copper-A Compound
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Bordeaux Mixture
*BLACK LEAF "40"

*BLACK LEAF "155"
*FLUXIT Spreader
*PARAPONT Paradichlorobenzene
Zinc Sulfate—Flake
*PARMONE Hormone Spray
Cryolite (precipitated)
*Trademark



INSECTICIDES AND FUNGICIDES

BETTER THINGS for BETTER LIVING . . . THROUGH CHEMISTRY

MAY, 1943

AMERICAN FRUIT GROWER

PAGE 3



A Better Land For His Return

He's digging slit trenches, now—deeper, but no wider, than those long, straight furrows he used to take such pride in plowing . . . remember? Some of the chores he has to do now are not pleasant, but he does them, and does them well. For he knows that he's fighting for you . . . for the land he loves . . . for the way of life that's the best this earth has ever seen. When he comes back, victorious, this whole broad nation should be his welcome mat. And he should find here the things he has fought for . . . kept and guarded for him . . .

THIS is a time for straight thinking and straight talk about the future . . . about the day when America's fighting men return to the land they've been fighting for. What kind of America will they come back to?

The best way to plan for those days that lie ahead is to put every spare dollar into War Bonds. Not only because it's high patriotism to help buy tanks, and ships, and planes. Not only because it proves to our fighting men that we're behind them with all our loyalty. More than that. Those War Bonds you buy now are an investment in a strong, sure future . . . for *you* . . . for the men now in battle . . . for America.

In other years you might have put the surplus money into new machines. But now your new equipment, your new

Farmall Tractor and International Truck have been made into tanks, and shells, and guns—for your boys who are fighting for you.

And remember, when you buy War Savings Bonds, you are lending—not giving—your money to your country. The principal itself, and good interest, are guaranteed by the Government of the United States. At maturity you will get \$4 back for every \$3 that you put in.

The more bonds bought voluntarily, the less money our Government will have to raise by taxation! That's an important point to consider.

So exercise the patriotic thrift that means freedom—for your country and for you. Put your money—every dollar you can—into War Bonds . . . and keep it there, for Victory!

INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue Chicago, Illinois

● We know, and our dealers know, the tremendous problems caused by restrictions on the manufacture of new and replacement machines. Your McCormick-Deering Dealer can help you keep what you have in working order. He's a specialist in farm equipment. See him first.

INTERNATIONAL HARVESTER

WINTER INJURY

(Continued from page 2)

production of 704,000 bushels. Peaches now are coming into bloom in the extreme southern part of Ohio and farther north the blossom buds are developing rapidly.

Winter injury has thinned blossom buds with considerable killing in low lying orchards in central and southern Ohio, but most areas report 25 per cent, or more, live blossom buds on Elberta, Halehaven, Golden Jubilee, South Haven, and other important varieties. With favorable weather, full peach crops are possible when this percentage of flower buds, well distributed over the trees, survives the winter and spring frost hazards.

Generally the prospect continues quite favorable in the important peach countries adjacent to Lake Erie. Through central and southern Ohio the prospect is for a much lighter crop, but more favorably located orchards in the southern half of the State have a better prospect than a year ago when the crop in this section was extremely light.

NEW YORK

By Dr. H. B. Tukey

Agricultural Experiment Station
Geneva, New York

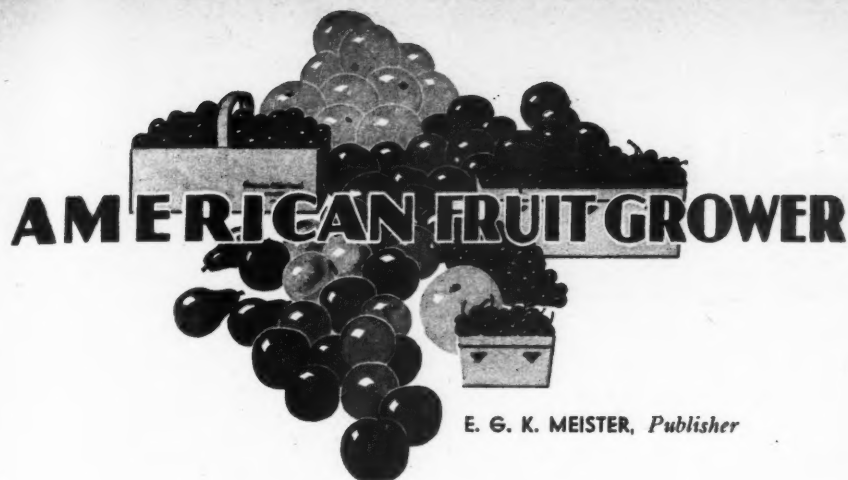
THERE has been considerable injury to both fruit crops and fruit trees in New York State. In the Champlain Valley where apples are the chief consideration, no injury is reported to buds, but there are various degrees of mild injury to wood.

In the Hudson River Valley the peach crop is badly hurt, probably 90 per cent of the crop is lost while there is also considerable wood injury. Pear trees show considerable blackening, and considerable bark splitting has appeared on Baldwin and Greening trees. Sour cherries show 60 per cent of a crop and sweet cherries, perhaps, five per cent.

In the vicinity of Rochester, nearly 100 per cent of the peach buds were killed, while the trees show some browning of cambium on the trunk and often in the crotches. Occasionally trees are reported with bark loosened from the trunk, or so badly blackened, that there is no hope of saving the trees.

In the Niagara County area there is about one-quarter of a crop of peaches expected. Elberta buds were hurt badly, but with the increased planting of Hale Haven, Golden Jubilee, and other more hardy varieties, there are sufficient live buds to give a quarter of a crop.

In the Chautauqua area the primary buds are reported killed in grapevines.



Training the Young Land Army

By PAUL E. BROWN, Coach

Ohio State University Football Team

(Coach Paul E. Brown wrote this editorial with the full realization that he is not the person to tell farmers and fruit growers how to run their jobs. But AMERICAN FRUIT GROWER feels that, because of his wide and competent experience with youth in the field of his profession, he is qualified to give some beneficial advice on the management of youth at any time, anywhere.—The Editors.)

WITHIN the next few months a great stream of American youth will be diverted into farm labor channels in order to help during this wartime emergency. This is a relationship between the youngsters and farmers, or fruit growers, which can be made a very profitable and happy one, or with improper handling a very disastrous one.

The farmers handling these 16 and 17 year old boys and girls should not assume that they know what is to be done on a farm or in an orchard. Some of them may be rural children and will have a pretty good idea, but many of them will come from small towns and cities and they may have a romantic outlook upon their trip to the country. It is far better to make certain that these young people understand from the beginning that they are embarking upon a "work" program. Assume that they know nothing about the job at hand, and explain it thoroughly to the individual, or group, before entering into the work. In this explanation always explain the "why" for every action. Youngsters at this age respond much more quickly when they know the reasons for what they are doing. You will find that an organization period, with a good explanation of what is to be done with more emphasis placed on the "why" of it before the project is started, will pay great dividends.

Next, it is necessary for proper leadership to be given to these youngsters. I suggest that the farmer, or fruit grower, take over this leadership himself and work along with the group until such time as he can find an outstanding leader among the youngsters. Then he may gradually divert some of this responsibility. Once they get into the swing of the job and know what they are doing, it makes for good team play to give them more and more the responsibility of completing the work. Above all, you do not want an impersonal relationship between the one in authority and the hired hands. Youngsters do not respond well under such a condition. They soon will make it a game to see how much trouble they can cause. It is much easier to lead them than to force them.

Consideration should be given to the physical welfare and abilities of their age. Most of them never will have known hard work, particularly for long hours. So far as possible, the routine of their work should be varied to avoid monotony. Even though it may not be practical to shift them to different tasks, it is often possible to vary the approach to the job, just enough to keep their interest. You might even put their efforts on a competitive basis, if possible, because youngsters enjoy this.

You will find that young people really are a very interesting group with which to work. You must be tolerant and understanding of them and, if you enter into the spirit of the situation with this in mind, you will find that you will have a most happy and worthwhile relationship. Moreover, you will have made a permanent contribution to the better understanding these future men and women will have of rural life.

FOR VICTORY



BUY UNITED STATES WAR BONDS AND STAMPS

"MY COUNTRY, 'TIS OF THEE"

MOST of the farm and orchard equipment, owned by Japanese and Japanese-Americans at the time of evacuation from Pacific Coast states, has been disposed of and will be used in 1943 production, according to the War Relocation Authority.

The sale or lease of equipment remaining in the possession of evacuees is being arranged for by WRA and information regarding such equipment will be available from State USDA War Boards.

THIRTY-ONE thousand tons of dried prunes and raisins which have been reserved in West Coast packers' hands have been released by the Food Distribution Administration for sale in regular commercial channels. This includes 17,625 tons of raisins and 13,382 tons of dried prunes.

STUDIES of pectins have been facilitated, according to the United States Department of Agriculture, by a gift from the British Food Ministry of a testing machine, known as a jelly tester. The machine, now in use in the Agricultural Research Administration laboratories, measures the resistance of jellied materials by means of a vane on the end of a rod which is twisted in the jelly by a cord pulled by a water-cup weight.

The degree of resistance indicates whether the pectin product is too watery, too rubbery, or suitably jellified.

INCLUDED in the rationed farm machinery on which restrictions on distribution have been lifted by orders of

(Continued on page 6)

NATIONWIDE NEWS

(Continued from preceding page)

the Department of Agriculture are power spray pumps. The new order permits manufacturers of power spray pumps to release 100 per cent of their production under War Production Order L-170 and all inventory stocks produced under L-26.

SPECIFIC dollars-and-cents maximum prices have been established by OPA for all grades of superphosphate, which are uniform to all sellers at each producing point in the United States.

The new maximum prices reduced some ceilings previously established at March, 1942, levels by the General Maximum Price Regulation. In other cases, slight increases are authorized. Consumer prices are not affected. This action governs only prices producers may charge other fertilizer manufacturers or mixers.

TIRE dealers or persons selling or servicing farm and orchard equipment who need rear-wheel tractor tires to serve their customers will be able to get stocks for this purpose, OPA has announced. This action will make possible a greater number of sales outlets for the convenience of farmers and fruit growers.

IT has been ruled by OPA that hereafter farm tractor and implement tires may be recapped only with Grade F camelback which is made almost entirely of reclaimed rubber. This is in an effort to conserve rubber.

Further, replacements will not be issued for such tires which are recappable. No rationing certificate is required to have a farm tractor or implement tire recapped with Grade F camelback.

TO forestall premature promises of abnormally high prices for grapes, the Office of Price Administration has announced that ceiling prices would be placed prior to the harvest of the new crop on all types of California grapes. There probably will be separate ceilings for table varieties, raisin grapes and wine types, OPA indicated. The Department of Agriculture

has concurred in this plan to establish these ceiling prices.

ACCORDING to the National Apple Institute, ceiling prices probably will be placed on apples before the next crop starts. These will be worked out by the USDA and OPA.

Hearings will be held in several parts of the country to give growers and the trade an opportunity to make recommendations, probably through their state industry committees, but the final decision will be made in Washington.

Few may welcome having ceilings put on apples, however, the policy of controlling prices to retard inflation is definitely established. Fruit growers are committed to accept ceilings when they become necessary, and to cooperate in every way with the Food Division of OPA, in furnishing data on supply, demand, costs, etc., which enter into the establishment of fair ceiling prices.

ACCORDING to USDA Crop Reports, fruit prospects appear promising in the West and citrus trees in Florida and Texas are blooming satisfactorily, but prospects for other fruits are below average in most areas east of the Rockies. The peach crop in 10 Southern States suffered severely from winter and spring freezes.

The reported acreages of strawberries, which supplement the tree fruits on the market, are showing sharp reductions.

APPLÉ sugar-syrup, newly developed and perfected by the USDA, now is being used as a substitute for glycerine in the manufacture of cigarettes. The use of glycerine in all civilian products has been banned by WPB as it is needed vitally in the manufacture of munitions.

The Department of Agriculture has been experimenting with apple syrup as a substitute for sugar for some time and months ago the possibilities of the syrup in a different form as a replacement for glycerine in tobacco manufacture were recognized, and already a half dozen plants in the United States and Canada are manufacturing it. Production this

year is expected to reach between 2,000,000 and 2,500,000 pounds.

SINCE the total pack of apples and apple byproducts in tin is to be reserved for the armed forces, the demands for dried apples and "quick freeze" apples will be greater than ever before. The Food Distribution Administration is ready to help established canners convert to drying or "quick freezing" in order to assure a supply of processed apples, and to maintain the outlet for the great quantity of apples which would go into tin if the normal supply of tin were available.

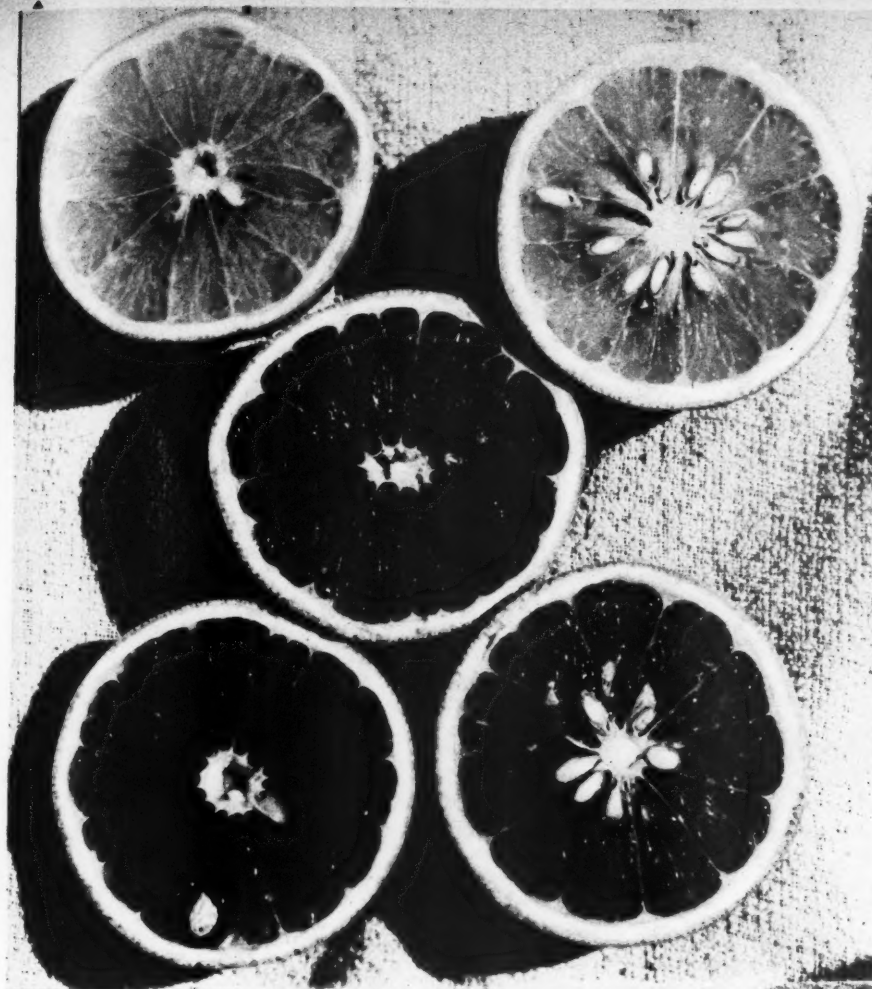
Those interested in securing information on machinery and priorities for conversion may address inquiries to Mr. J. B. Wyckoff, Chief of the Facilities Branch, Room 2095, U. S. D. A., Washington, D. C.

THE Children's Bureau of the U. S. Department of Labor has issued a new booklet titled "Guides to Successful Employment of Non-Farm Youth in War-time Agriculture." It is for the use of farmers, fruit growers, parents, teachers, group leaders, and others. This booklet will be especially useful in relation to the Victory Farm Volunteer Program which already is calling older boys and girls out of school in many towns throughout the country to aid with spring planting.

SO great is the need for dried fruits in military, civilian and lend-lease requirements that the Food Production and Distribution Administration has announced it will be necessary to provide that all raisin variety grapes, produced in the eight leading California grape producing counties, be diverted into raisins. Excluded, however, are the grapes which are reserved by canning contracts approved by the Administration. This is an effort to establish the highest possible production of raisins for 1943.

Normal distribution of fresh raisin grapes into table or winery channels would lessen the production of raisins which are urgently needed for war.

NEW ceilings for apple crates in New England became effective April 15, 1943, in accordance with OPA rulings. The prices the manufacturer may charge for shook are 21¼¢, or 24½¢ made up, slats 75¢ per hundred. These prices include free delivery within 50 miles of the factory. This is an increase of about three cents over present ceiling prices under the old General Maximum Price Regulation.



High-quality grapefruit of both seedy and seedless types in standard and pink fleshed varieties are grown in Texas and in the Rio Grande Valley. Above in upper left is a half section of a Marsh Seedless Grapefruit; upper right, Duncan; center, Ruby (Redblush); lower left, Pink Marsh; lower right, Foster Pink.

CITRUS FRUIT PRODUCTION IN TEXAS

By W. H. FRIEND
Texas Experiment Station

CITRUS fruits have been grown in South Texas for more than 50 years, but the commercial production of oranges and grapefruit has become a major horticultural enterprise in the region just during the past 20 years, and Rio Grande Valley grapefruit and oranges have become widely distributed on the markets of this country only during the past five seasons. Texas grapefruit and grapefruit products are known now on most of the large markets of this continent and also on some foreign markets.

Twenty-five years ago, Texas pioneers in the citrus orcharding industry received little encouragement from professional citriculturists, as it was then thought that the cold danger was much too great for the profitable production of citrus fruits. Farmers always are willing to gamble on the weather, however, and growers who made plantings of grapefruit and

oranges in the delta region of the Rio Grande back in 1917-20 proved that the weather hazard is no greater than those due to production problems, and probably is not equal to the hazards created by unstable marketing conditions.

The industry expanded at a rapid rate during the boom days of 1927-30, but there was a sobering-up period during the depression when Valley growers were faced with the problem of marketing ever-increasing volumes of fruit in competition with well established areas at a time when purchasing power in consumption areas was at its lowest ebb.

The Rio Grande Valley citrus industry has survived the risks of unfavorable weather, unstable markets and unchartered production fields, and now has become an important factor in grapefruit production. Orange production in Texas is in its

infancy and the annual production now amounts to only three million boxes per year. But this industry is being rapidly expanded as there are sizeable acreages of good, irrigable land available, and it is now obvious that orange trees will thrive on land that is unsuited for grapefruit production.

The perfection of processes for preserving grapefruit juice and other products saved the day for Texas grapefruit growers, and it is hoped that the popularization of orange juice as a health food will solve the marketing problem created by increasing production of this fruit.

The periodic occurrence of cold weather, sufficiently severe to damage the unharvested portion of the crop and the trees, is a hazard to be expected in almost any citrus fruit production enterprise. However, Rio Grande Valley growers soon learned that citrus trees were subject to attack from a number of insect pests and diseases, and required special care in the form of irrigation and soil management.

One of the first commercial orchards to be established in the Lower Rio Grande Valley, and one of the most profitable, demonstrated that cultivation is not a highly essential part of citrus orchard management. Other experimental plantings have repeatedly demonstrated that selection of adapted varieties, use of congenial understocks, control of insects and disease, weed control, and the proper use of irrigation water are far more important than cultivation, pruning and, possibly, fertilization. Epidemics of insect pests and disease occasionally occur and cause heavy losses to some growers, but it seems that the timely and proper use of irrigation water is the one problem common to all producers of citrus fruit in South Texas.

Valley citrus trees are rather durable and can endure more hardships and abuse than seems possible. This is not an unmixed blessing as neglected or abandoned orchards are occasionally rejuvenated by summer and fall rains and increase the total production for the region by more than a million boxes. Strange as it may seem, the fruit from these abandoned orchards frequently has the finest texture and the best table-quality and keeping quality of any fruit produced in the region. It is usually small in size and blemished by insects. The production from these semi-abandoned, "wild" groves is unfair competition to growers who take reasonably good care of their trees and who carry their share of the general tax burden.

The profitable production of citrus fruits is a business of details. Fortunes have been made by Valley citrus orchardists who were lucky in the matter of starting out with good soil

(Continued on page 13)

HAIL

THE ORCHARD SABOTEUR



Upper right corner: This photo shows fruit and leaves which have been badly damaged by hail. These peaches would have been fine large fruits if unpredictable hail storms had not occurred.

Above: Here is a clustered group of apples that, likewise, have been ruined by hail. The loss of such fruits as these is a serious problem to the grower and to wartime needs for ample fruits.

Right: The ground in this photo is literally blanketed with apples that were knocked off the tree during a hail storm. Such fruit can represent almost a total loss of crops in a storm-hit orchard.

THE LOSS of good fruits because of hail storms and subsequent damage will be more serious than ever this year because of the Nation's great need for every fruit crop that can be produced this season. In past years the loss rested more-or-less with the fruit grower alone, but in 1943 hail also will be the undefeatable enemy of soldiers and people in far-flung corners of the world who are dependent on the United Nations' fruit growers and farmers for subsistence and even for life itself.

There is nothing the fruit grower can do to protect these others from ever-unpredictable hailstorm losses of fruits and other crops, but he can protect himself with adequate hail insurance that financially will lessen the loss of his crop, or a portion of it, and the loss of his hard labors.

"Everybody complains about the weather, but nobody does anything about it," Mark Twain once remarked, but there is very, very little anybody can do. And since modern invention and science have found no way of combating or thwarting hail storms, insurance alone can be the friend of the fruit grower when hail has damaged his orchards or vineyards.

Hailstones are the offspring of the weather's wildest mood and it can and does make the most grotesque and irreparable spectacle of any and all kinds of fruits to say nothing of every other kind of product grown. Since a tree laden with disfigured and bruised peaches, or an orchard through which the ground is blanketed with fallen scarred apples can be of no further use, hail becomes a dreaded enemy. No fruit grower should wait, however, until he finds his trees or orchard in such a condition before he provides protection for

(Continued on page 17)



THE first essential in successful orcharding is a well-drained soil. The roots of an apple tree are alive, as much alive as the leaves. They "breathe" or carry on the process of respiration the same as man: oxygen and carbohydrates are taken in, and carbon dioxide, water and energy are given off. And it follows that, if the roots are surrounded completely by water, they soon "suffocate," and either die immediately or become so weakened that the tree is of little value to the grower.

In the hundreds of years that man has observed plant growth he has known that too much water is as detrimental as too little, although the latter probably has received the more attention. Among fruit growers it is common knowledge, too, that some varieties can tolerate poor drainage better than others. McIntosh is an example of this. Stayman Winesap, on the other hand, seems to be particularly susceptible to excess soil water.

Most trouble from excess soil water

Preliminary tests consisted of measuring photosynthesis (food manufacture), transpiration (water vapor loss), and leaf growth shortly before and after the roots were submerged. One-year trees were placed in a specially built chamber where environmental conditions resembled days in May and June in central Ohio. The trees were growing in soil in 10-gallon butter tubs.

Photosynthesis showed a downward trend the day after the flooding began. Transpiration showed a definite downward trend a week later. Both processes were almost stopped within three weeks. The rate of increase in number and size of leaves on the shoots also was markedly inhibited. On the basis of several of these tests it was concluded that under these conditions leaf metabolism was injured from one day to two weeks after start of the flooding period. The length of time the trees could resist the effects of excess water seemed to depend upon the variety, the initial vigor of the trees, and the evaporat-



Figure 1—The water table beneath this tree was maintained 10 inches from the soil surface. Note the large leaves and excessive shoot growth. This tree probably will suffer when the water table is lowered to 30 inches.

EXCESS SOIL MOISTURE

By N. F. CHILDERS, HARRY W. FORD and D. G. WHITE

Ohio State University

comes in spring shortly before and after bloom. The water table may fall three or four feet from the surface within a few hours after a heavy rain. If so, the soil is said to be properly drained. However, if water stands on the soil surface, or within a few inches of the surface for two or three weeks, the soil is indeed questionable for orcharding. But the latter situation is not uncommon in commercial orchards. Almost every grower can recall one such spot in his orchard. The question is, "How long can a soil remain saturated with water before a tree is physiologically weakened?"

For the past three years an experiment has been in progress at Ohio State University for the purpose of ascertaining the effect of flooding the soil on apple tree growth. Most of the experiments have been performed with the Stayman Winesap since it is a leading variety of this section and, also, since it is susceptible to excess soil moisture.

ing power of the surrounding air. Some trees could be killed in a week, others would remain alive for two months. If, in some cases, the water were drained from the soil two weeks after the submersion period started, the trees did not recover for two weeks or more. Some never returned to the initial status in photosynthesis.

The tests were carried to the field during the summers of 1941 and 1942. The problem was to determine the effect on 7-year Stayman trees of maintaining the water table at: (1) 20 inches below the soil surface during the growing season; (2) 10 inches below the soil surface; and (3) completely submerging the roots for five weeks when the leaves were unfolding, May 1 to June 8. Although flooding for five weeks did not kill the tree, shown in Figure 2, it was so weakened that it probably will not recover for five to seven years. The foliage was yellowish-green, shoot

(Continued on page 19)

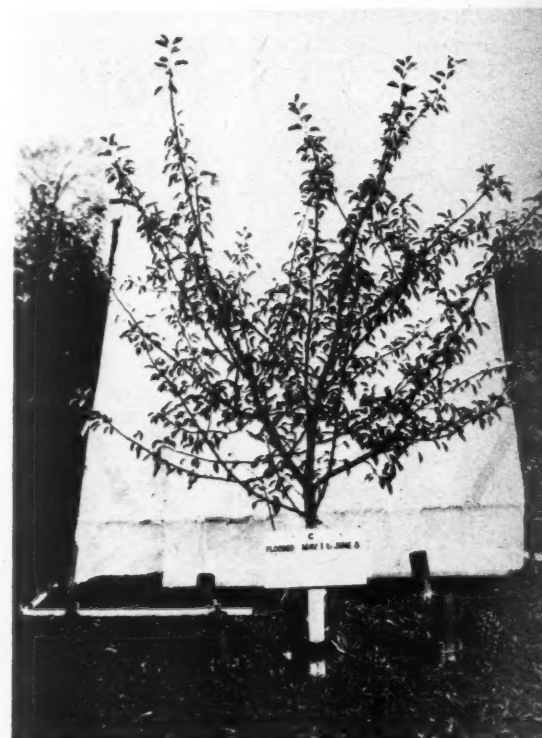
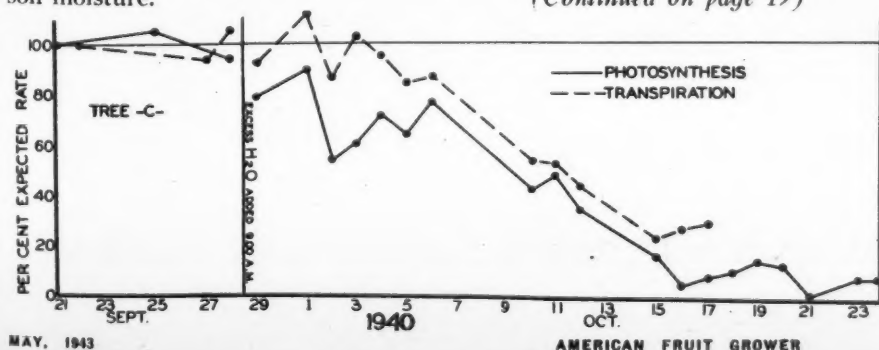
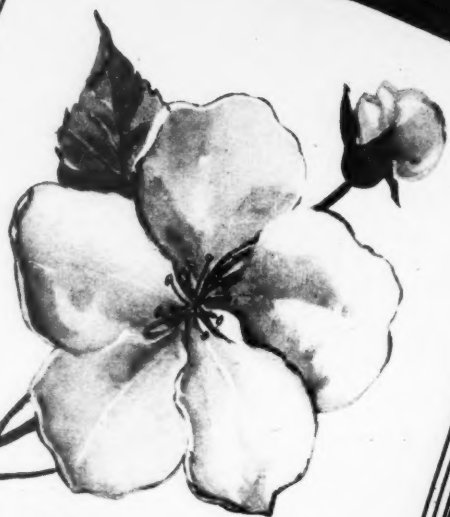


Figure 2—The above tree was subject to a "water-logged" soil for five weeks when leaves were unfolding. It definitely was weakened and even with proper management may not recover for five to seven years.

Figure 3—Young Stayman Winesap trees showed a downward trend in leaf metabolism a day or so after their roots were submerged. The experiments were performed in a large chamber, controlled to resemble conditions of a May day.

Take a leaf from the book of
the good orchardist

"BLACK LEAF 40"
and
BLACK LEAF 155
can be used with
Other Sprays



Protect this promise

Protect the Foliage Also

Like soil erosion premature defoliation is truly detrimental to an orchard; good soil and healthy leaves are necessary for continued vigor.

BLACK LEAF 155 14% programs provide effective codling moth control, plus control of certain other insects such as leafhoppers, aphids, and newly-hatched bud moth larvae.

BLACK LEAF 155 programs—non-caustic—protect foliage, orchard vigor, and fruit quality, without a heavy spray film—no cleaning required at harvest.

Get extra codling moth protection by adding Black Leaf 40 or Black Leaf 155 to early lead arsenate sprays.

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Leaf 155**



BREEDING NEW BLUEBERRIES

SINCE individual preferences for various types of cultivated blueberries vary, co-workers at the Horticultural Station of the Bureau of Plant Industry, Beltsville, Maryland, have been conducting widely experimental work on blueberry breeding in an effort to propagate berries of varying but satisfying characteristics. Some persons like a sweet blueberry while others like a blueberry so sour that it can be eaten only with liberal quantities of sugar. Others prefer a juicy and sweeter blueberry, or another type which has a slight acidity and highly developed blueberry flavor. It is the object of constant blueberry breeding to develop varieties that will satisfy all tastes, but which, at the same time, will have productive and shipping qualities that will make the berries commercially practical.

The first cultivated blueberries were developed from the wild blueberry by the late Dr. F. V. Coville of the United States Department of Agriculture. His first steps were to determine the fundamental facts of the life history of the wild blueberry. He learned notably that this berry, like many other plants, requires an acid soil. Next, he worked out methods of grafting, budding, division, layering, propagation, twig cuttings and root cuttings, and pollination. He selected superior wild blueberries which are grown in New England and from the crosses produced blueberries with various characteristics.

The different berries were segregated for their various characteristics and from these some fine cultivated berries have been originated. The most notable characteristic of cultivated varieties as distinguished from the wild is their large fruit.

U.S.D.A. Photographs by Peter Killian.

Upper left: Extreme care and diligence must be exercised in crossing two varieties of blueberry. The pollen from a flower on one parent plant is tested on the breeder's thumb. In pollinating, the pistil of the flower from which corolla and anthers have been removed is touched to the pollen on the thumbnail. This is a delicate task.

Upper right: Here Dr. George M. Darrow, Pomologist of the Bureau of Plant Industry, U.S.D.A., Beltsville, Maryland, crosses two varieties of blueberry. The one on the left is the evergreen blueberry of the Northwest and the other is the dryland blueberry of the East. Both have distinctively different characteristics and qualities.

Center left: Here the Weymouth blueberry, largest early variety originated by Dr. F. V. Coville, and the Myrsinites, a small-growing blueberry which is native to Florida and southern Georgia, are being crossed. The instrument below is a thermograph which automatically keeps a continuous record of the greenhouse temperature.

Left: Pictured here are Pamberton blueberries. This berry came from the cross Katherine X Rubel which was made in 1921. It is a considerably darker berry than some others and the bush is one of the most vigorous of all varieties. The berries are large and the crop ripens comparatively late. It is propagated very easily.

AND WE HAD "Real Bread"

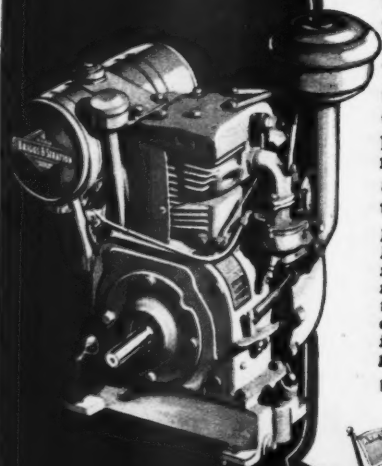
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NUT GROWERS NEWS

CARE OF NUT TREES

NEWLY set nut trees require better than average care if they are to thrive. Too often it is assumed that they, like their wild relatives, can take care of themselves after they have been set. This is not so. They need better care than fruit trees until they are well established as transplanting results in the loss of a major portion of their root system and nut trees do not recover as rapidly as fruit trees.

It is essential that nut trees be set in a good soil, one that is fertile, well supplied with organic matter and well drained. It is a waste of time and money to plant nut trees in poor soils. Good soils are available often in fence rows, rough land and odd corners about the farm that do not lend themselves to the growing of cultivated crops. Indeed, the soil in these places may be superior to the cultivated soils adjoining since the organic matter has not been depleted through cultivation, or the topsoil lost through erosion.

The problem in growing nut trees in these odd corners is to eliminate weed competition and maintain satisfactory moisture relationships until the trees are large enough to hold their own against the competition of surrounding vegetation. For this purpose there is nothing equal to a good mulch. A mulch keeps down weed and grass growth and is very effective in conserving moisture. If it can be maintained over a period of years, considerable plant food will be added to the soil by the decaying mulch.

Various materials may be used. Very often enough weeds and grass may be cut in the vicinity to provide sufficient mulch. Hay that has been spoiled by rain, or various straws are good. Legume hays rot rapidly and provide considerable nitrogen, but strawy materials rob the soil of nitrogen during the first year or two until the soil organisms which rot the straw themselves break down and release the nitrogen they have used in breaking down the straw. Annual replenishing of the mulch is necessary and enough should be used to keep down weeds and grass three or four feet from the trunk of newly set trees and farther from older trees.

During the summer the foliage should be examined for signs of insect injury. The walnut caterpillar is a common pest of black walnuts and is easily controlled with an arsenical spray.—GEORGE L. SLATE, Sec'y. Northern Nut Growers Assn., Geneva, New York.

CITRUS PRODUCTION

(Continued from page 7)

and good trees, and who mastered the comparatively few problems of production early in the game. Others have been much less fortunate and actually have lost fortunes in their efforts to establish and maintain orchard enterprises under impossible conditions.

Many outsiders wonder why the greater portion of the Valley's citrus acreage is planted to grapefruit. This is due to the fact that young grapefruit orchards are much more productive than comparable orange groves, and, during the seasons prior to 1935, the unit price of grapefruit was about equal to "on the tree" prices for oranges.

Most of the older trees are of the Marsh Seedless variety, and the large grapefruit canning and by-product industry is based on this excellent variety. The better Marsh Seedless orchards will yield annually about 20 tons of fruit per acre, but the average is far below this figure. Fully 50 per cent of the Marsh grapefruit crop is processed, and it is likely that this proportion will increase as young orchards of the pink fleshed varieties come into bearing and dominate the fresh fruit markets. Pink fleshed, seedless grapefruit has been a favorite with Valley growers since 1930, and good orchards of "pinks" are still highly valuable property. Redblush is now the popular grapefruit variety and a large part of the new acreage is being set to this variety.

Most of the older acreage of orange trees was planted to early maturing, thin skinned, sweet varieties of the type grown in Florida. During the past 10 years much of the new acreage has been planted to Valencia (late) oranges, and recently, some acreage is being planted to the mid-season Joppa variety.

Tangerines are produced in limited quantities. Merchandising problems present a serious impediment to the expansion of this fruit production enterprise. Tangelos, the tangerine-grapefruit hybrids developed by U.S.D.A. co-workers, grow to perfection in the Lower Rio Grande Valley, and the possibilities in this field remain to be exploited.

The first citrus packing plant was built in the Lower Rio Grande Valley in 1922. It had a capacity of one car per day. The total packing plant capacity in the Valley at present could handle five hundred cars a day if sufficient labor were available and if market conditions were to justify any such rate of output.

There are about seven million citrus trees in the orchards of South Texas. This acreage produced about sixteen million boxes of grapefruit and about



What do your Furrows and Fences really mean?

Next time you remember to pick some flowers to take in to the missus, just stop and look around a minute or two.

Do you get a good feeling out of what you see before you? Do you feel your liberty, your security, your confidence in your own ability to take care of yourself, your family and your land?

Do the furrows and the fences and the buildings and the fields have a whole new meaning to you?

Then you know what "morale" is. Just a lot of little things. Little things? Maybe. But they certainly add up to something pretty big and important!

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One of the little things many Americans enjoy is the right to a cool and relaxing glass of beer when the day's work is done. It doesn't have to be beer—it can be lemonade or buttermilk.

A glass of beer—a small thing, surely—not of crucial importance to any of us. And yet—morale is a lot of little things like this. Little things that help to lift the spirit, keep up the courage, make us more tolerant and understanding of one another. Little things that are part and parcel of our own American way of life.

And, after all, aren't they among the things we fight for?



MORALE IS A LOT OF LITTLE THINGS

three million boxes of oranges during the season of 1942. There should be a steady increase in production during the next few years as many acres

of good land have been set to oranges and pink fleshed grapefruit by experienced orchardists during the past five—
(Continued on page 17)

STATE NEWS

ARKANSAS—In 1942 the Pitts brothers of Sugar Hill Fruit Farm, Lincoln, harvested 30,000 bushels of apples from 200 acres of orchards while another 80-acre orchard was "coming on." In a region noted lately for heavy codling moth infestations, it was surprising to find that their apples were especially "clean."

In 1936 when S. C. Pitts, one of the North-



The Pitts brothers of Lincoln, Arkansas

western Arkansas's most prominent fruit growers passed away and left his orchards to his three sons, many in and around Lincoln prophesied that the Pitt Sugar Hill Fruit Farm soon would fall into decay, but last year's fine crop was good proof that the younger generation is "of some account."

The current fruit situation in Arkansas is about as follows:

Apples, grapes and cherries are in good condition. Strawberries possibly will show some freeze injury on unmulched beds. Peaches, which were severely hit by winter weather, are largely wiped out except in the southwest area of Nashville where one-third of a normal crop is expected.—**THOMAS ROTHROCK**, Sec'y, Springdale.

KANSAS—Present indications in the State point to a marked increase in the planting of fruits and vegetables. Soil and weather conditions have been very good. Many nurserymen report that they are practically sold out of fruit trees.

At the last meeting of the Missouri River Apple Growers Association, the organization voted to sponsor the Annual Apple Blossom Festival in 1943.—**GEO. W. KINKEAD**, Sec'y, Topeka.

MICHIGAN—The high wages paid by Michigan's many war industries have been draining good help from the farms, constituting a more serious factor in this respect than induction of young men from the farm into military service. Production labor shortages in southwestern Michigan are especially serious at this time.

Because of extremely low temperatures in March in northern and central Michigan, much damage was sustained by peach and sweet cherry trees. Peach crops in 1943 in Michigan will be confined to more fortunate locations, near Lake Michigan. — **H. D. HOOTMAN**, Sec'y, East Lansing.

VIRGINIA — This past winter has been severe in Virginia and there has been peach bud damage

in various parts of the State, but prospects are for a medium to good crop in most sections. The apple bud prospects were better than expected after the past year's heavy crop.

Though the labor shortage is acute, fruit growers seem determined to take the best care possible of their orchards under present conditions.

OREGON—The 1943 planting season for horticultural crops finds Oregon growers putting forth every effort to grow the food crops needed for carrying on the war. A prime handicap is labor shortage.

Strawberry acreage is down and may become less as the planting of maintenance acreage of strawberries is badly hampered by lack of labor used to dig plants to be used in planting new fields.

Many commercial orchards have not received the usual dormant sprays, or the annual pruning for the same reason. The average "run-of-the-mill" hired labor is not competent for these specialized operations, and the situation is critical in connection with various crops that require specialized hand labor.

Oregon fruits on the whole have survived the winter weather. Losses, however, were reported in certain areas.—**O. T. McWHORTER**, Extension Horticulturist, Corvallis.

FLORIDA—Florida growers and shippers can obtain thousands of used shipping containers at Army camps throughout the State, according to J. M. Williams, State Supervisor with the Food Distribution Administration.

There are 68 camps and bases in Florida, all of which accumulate all types of vegetable and fruit containers. Apple boxes, citrus fruit boxes and other types are available. Further information can be obtained from Mr. Williams, Dyal-Upchurch Building, Jacksonville.

UTAH—To conserve rubber the Board of Directors of the Utah State Horticultural Society decided to hold a series of local meetings in place of the Annual Convention at Salt Lake City. These meetings were held in Box Elder, Weber, Davis, Salt Lake, Utah, and Washington counties, and were well attended by growers.

The topic of most discussion at these meetings was that of local marketing. During the last year the population in the leading fruit producing counties has almost doubled. In



This is a picture of last year's harvest of red raspberries on the farm of A. Hermanson at Thief River Falls, Minnesota. Mr. Hermanson is Sec'y-Treas. of the Minnesota Northern Horticultural Society. It took many fast working hands to harvest this exceptionally fine crop.

AMERICAN FRUIT GROWER

this increase, comprised largely of defense workers, is a potential market which is large enough to purchase most of the fruit produced in Utah. These workers earn high wages and demand quality in their food purchases. Fruit of good quality will sell at a real premium this year.

The fruit crop in general looks very promising at present with a good heavy bloom on all apricots, peaches, and early plums. The bloom is somewhat earlier than last year and growers are hoping for a frost-free spring.—**A. STARK**, Sec'y, Logan.

IOWA—To date it appears that the winter of 1942-43 did little, or no damage to fruit trees in this State with the possible exception of peach fruit buds. However, few peaches are grown in Iowa so the loss is not serious.

Small fruits seem to be in excellent condition with the possible exception of black raspberries which have been affected with Anthracnose. Southeastern Iowa will produce the bulk of Iowa's fruit crop this year.

Iowa orchardists are seriously concerned about being able to secure an adequate number of colonies of bees for cross-pollination purposes. It was learned through the State Apiarist that as many as 50 per cent of the bees are dead in some colonies and it is difficult to secure enough package bees for replacement. As Iowa usually rates about second in honey production in the United States, the beekeepers fear they will not be able to produce the amount of honey and bees wax which they would like to for the war effort.

All Iowans, including fruit growers, are making every effort to grow more and better victory gardens. There is plenty of moisture in the ground and, while the season may be late because of cool weather, growth probably will be rapid when the warm weather arrives. Most of the fruit buds were still quite dormant the middle of April which will hold them back until in early May, thus escaping spring frosts.—**R. S. HERRICK**, Sec'y, Des Moines.

MAINE—At recent meetings of the Farm and Home Week, held at the University of Maine, orchard spray pumps and nozzle mechanics were among the topics discussed. Walter Norton, Bean representative, emphasized the whirl plate and gasket thickness as keys to quality of spray. He advised that, when distance is desired with a six- or eight-nozzle head, larger disc openings should be used in the end nozzles. Whirl plates are supplied with one to seven holes and with the use of more holes the spray stream becomes narrower. He recommended that after determining the capacity—the output of the nozzle in gallons per minute—25 per cent be added for reserve in arriving at the correct pump capacity.

A panel discussion in which J. H. Waring, S. L. Painter, W. M. Morse, Donald Folsom, and F. H. Lathrop participated brought out the great importance of both thorough spraying and correct timing.

Mr. G. M. Foulkrod, Durham, New Hampshire, cited the many helps that are available from dealers, Extension Services, and agricultural schools in the care of orchard equipment, but emphasized that operators must expect to do the work themselves.

Mr. R. H. Sudds, Morgantown, West Virginia, advised that no postponement of tree training should exist during these war times. The extremely important task of spacing limbs both vertically and radially on the trunks requires little time. Following this very early training, pruning may be light until bearing age, but all cuts essential to a strong framework should be made. He suggested less detail pruning, more bulk cuts, and removal of weaker branches and retention of the stronger.

Pruning in May throughout Maine may continue since cold weather during April left much necessary pruning incomplete.—**J. H. WARING**, Sec'y, Orono.

(Continued on page 21)

MAY, 1943

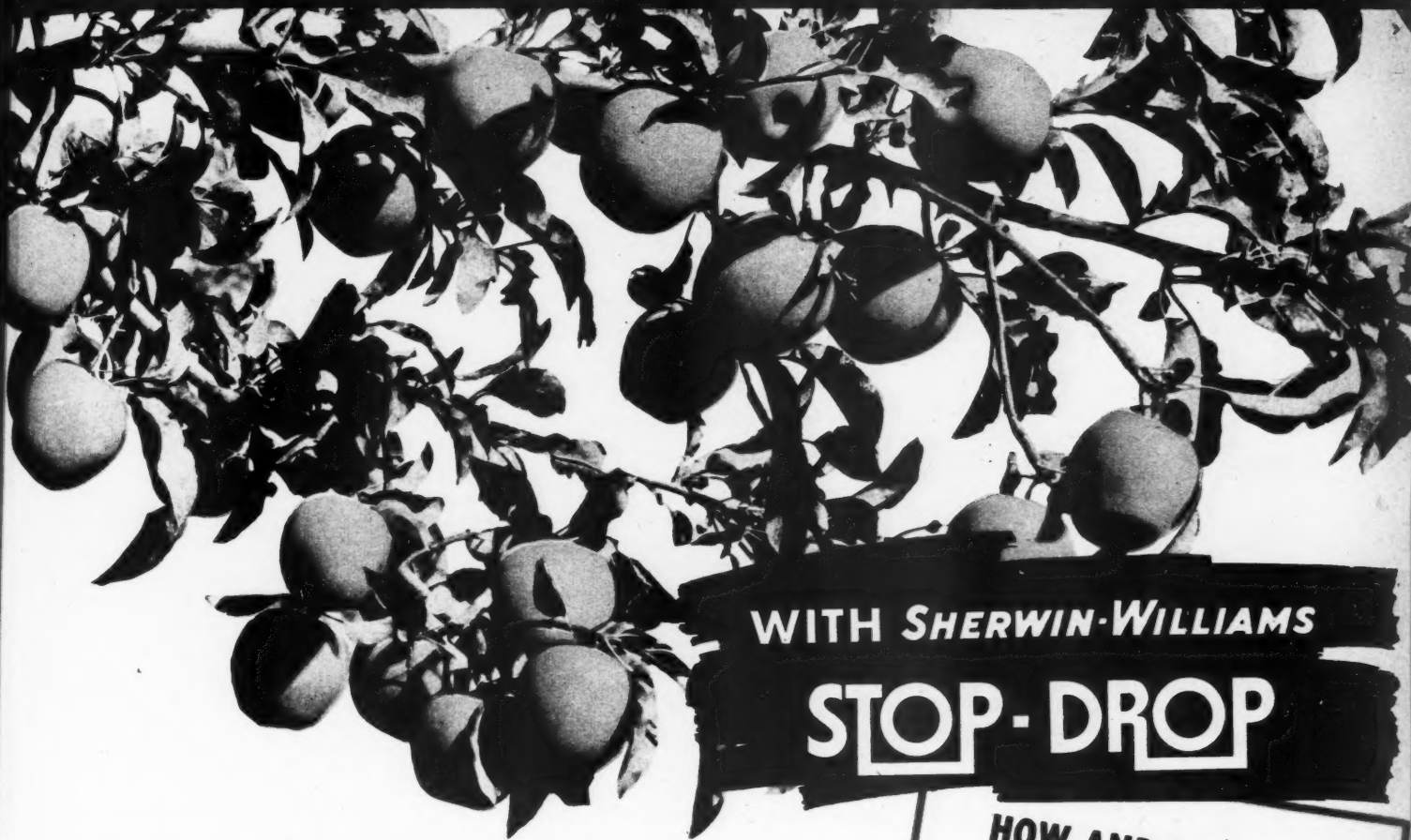
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HOW AND WHY S-W STOP-DROP STOPS DROP

Certain varieties of apples drop prematurely because of too early development of what is known as the abscission layer, which is a callous-like formation of cells at the point where the apple stem joins the spur. This action cuts off the flow of sap from the fruit spurs and causes certain varieties of apples, including Transparent, Duchess, McIntosh, Wealthy, Jonathan, Red Delicious and Stayman, also Bartlett Pears, to start dropping before the fruit has reached normal size and color.

S-W Stop-Drop stimulates normal growth of the fruit by deferring the formation of the callous or abscission layer, thus permitting these varieties of apples and Bartlett Pears to mature normally. This action results in an increase in the size of the fruit and reduces losses due to premature dropping to a minimum.



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The ingredients used in the manufacture of S-W Stop-Drop are classified as critical materials and are under strict priority. Sherwin-Williams, however, is making every effort to supply S-W Stop-Drop to growers who used it last year. An early order is your best assurance of timely delivery.

Another important problem facing apple and Bartlett Pear growers will be the acute shortage of pickers. This makes it all the more imperative that through the use of S-W Stop-Drop you keep apples and Bartlett Pears hanging on the trees long enough for the pickers to harvest them.

S-W Stop-Drop is the largest selling synthetic plant hormone in this country for the prevention of premature dropping of apples and Bartlett Pears, which is its best endorsement.

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ALSO . . . don't stop spraying too soon!

A recent survey showed that failure to get clean, worm-free fruit was due in almost every case to ending the spray schedule too early. Don't risk late-in-the-season damage; remember, you can't sell your crop until it's actually harvested!

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Ideal for use with arsenate of lead in either wash or non-wash spraying programs—and with fixed nicotine and nicotine sulphate if you wish to mix your own oil-nicotine spray.

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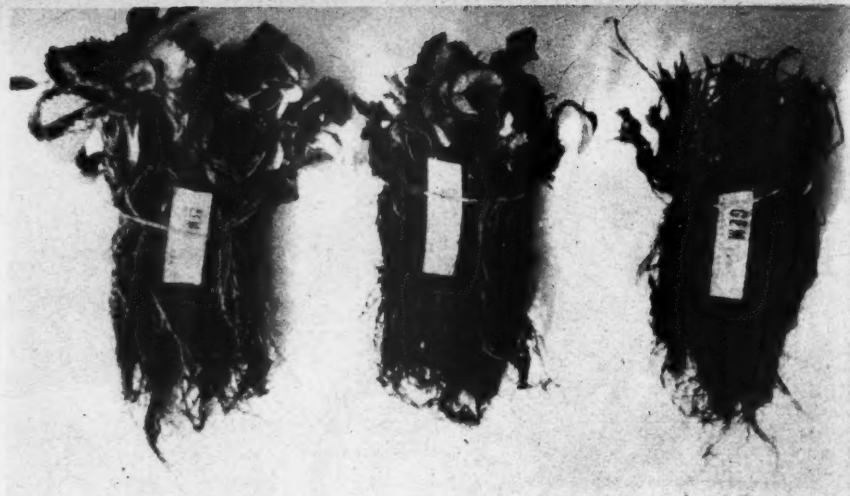
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These are some strawberry plants after having been stored "in the rough" at varying temperatures. These are of the Gem variety. The plant on the left was stored at 30° F, the one in the center at 32° F, and the third plant was stored at 36° F.

Storage of Strawberry Plants

Acknowledgment to Mark H. Haller
Bureau of Plant Industry, U.S.D.A.

EXTENSIVE experimental work has been conducted at the Bureau of Plant Industry, Beltsville, Maryland, in connection with the storage of strawberry plants. Strawberry plants generally are dug and shipped from nurseries in the early spring. Since there is usually a rather short period after the ground becomes workable until the plants become too active to stand shipment and transplanting, it seemed desirable to investigate the possibility of digging the plants in the late fall, or early winter, and holding them in cold storage over winter.

The plants, used in the investigations, were shipped by express to the experimental storage plants at Arlington, Virginia, or Beltsville, Maryland, where they were stored until spring when they were returned for planting to the nurseries from which they were obtained.

Two methods of packing were used. The plants were either cleaned, trimmed, bunched, and packed with moist sphagnum moss around the roots in shipping crates, or they were packed "in the rough" with the plants in bushel baskets lined with moist burlap, not cleaned or bunched, but packed with only the loose dirt removed.

The experiments were designed to give information on: (1) the growth response of stored plants compared with those freshly dug; (2) the response of different varieties to storage; (3) the influence of time of digging plants; (4) the most favorable storage temperature and humidity; (5) the effect of method of packing and other treatments during storage; (6) and the influence of time of set-

ting on stored and freshly dug plants.

The growth response of the plants during the early part of the first growing season was used as a measure of the effect of treatment. In the case of most varieties plants stored over winter grew as well, if not better, as freshly dug plants.

The date at which the plants become satisfactory for storage will vary greatly under different climatic and cultural conditions. Plants dug the latter part of October or early November generally were distinctly inferior for storage.

It seemed likely that temperatures near freezing would be necessary for the storage of the plants in order to retard mold growth and the growth activities of the plants. Temperatures of 30°, 32°, and 36° F. were tried. The 32° and 36° rooms were held at rather high relative humidities although preliminary tests indicated no significant effect of humidity on the subsequent growth of the plants. At below freezing temperatures, it is difficult to maintain high humidities and, consequently, there was a low humidity in the 30° room.

The results show that satisfactory growth of the plants generally was obtained after storage at each of the temperatures. Although the growth of plants from 32° storage averaged somewhat more than those from the other temperatures.

Results obtained in comparing the two methods of packing, in crates, and "in the rough," showed that, from the standpoint of growth response of the plants, there was little or no difference in favor of either method, al-

(Continued on page 18)

CITRUS PRODUCTION

(Continue from page 13)

year period.

About 35 per cent of the Texas citrus crop is handled and marketed by growers' cooperatives. The greater portion of the crop is sold to cash buyers who make bids for the fruit and quote an "on the tree" price for the fruit at so much per ton for the fruit which they move from the grower's orchards. The state law provides that all fruit purchased by cash buyers must be weighed on public scales and paid for on the public weigher's weights at the contract price. A state packers and shippers bonding and licensing law has been set up for the protection of growers from the irresponsible "fly by night" type of cash buyer.

Many of the grower-owned cooperatives operate orchard care departments, and there are numerous orchard service organizations which take care of orchard property that is owned by persons who do not reside in South Texas. Most of the orchard care is on a contract basis at a specified amount per acre for complete orchard service. Some of the better properties are cared for on a share crop basis, the care-taker's share being gauged by the productive capacity of the orchard.

An average of four irrigations, five light diskings, two dustings, one fertilizer treatment, one pruning, and two hand-weedings are used in the production of Texas citrus fruit. This seems like a relatively simple program, but timing and the thoroughness with which each operation is performed are the features which count most in the profitable production of citrus fruits in the Lower Rio Grande Valley of Texas.

HAIL—THE ORCHARD SABOTEUR

(Continued from page 8)

himself.

Hail falls more frequently in June than in any other month because during this month there still is a great range in the upper and lower atmospheric temperatures. It is the July hail, however, that does the greatest damage to some farmers and fruit growers, depending on their location, and, although hail is rare in the Far West, it does occur most frequently there in the winter. Cheyenne, Wyoming, is credited with more hail than any other city in the United States though the greatest number and most severe hail storms happen in the Middle West.

Fortunate is the grower who goes year after year without damaged trees or fruits from hail, and most unfortunate is the one whose orchards and crops sustain damage and who has not conscientiously provided against such loss.

MAY, 1943

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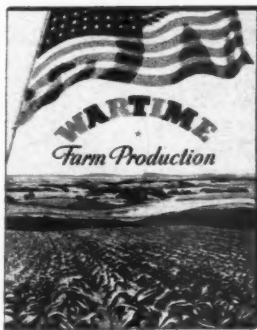
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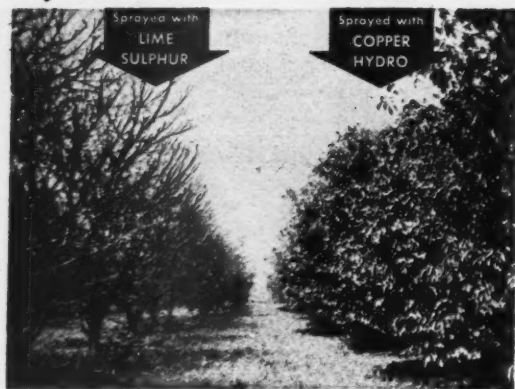


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STORAGE OF STRAWBERRY PLANTS

(Continued from page 16)

though, the crate method seemed somewhat preferable for 32° F. storage and the "in the rough" method for 30°.

From the standpoint of appearance, storage "in the rough" was preferable. By this method there was less discoloration of the leaves, and by trimming the plants in late winter or early spring the tops and roots had a fresh appearance that compared favorably with that of plants freshly dug from the field. Storing "in the rough" has the added advantage of making it possible to trim and bunch the plants in the later winter or very early spring when labor is relatively plentiful, though it has the disadvantage of requiring considerably more storage space.

Strawberry plants should be set out as soon as the ground can be worked in the spring and while the plants are fairly dormant. This, of course, is much later in the more northerly regions yet growers in the northern regions frequently obtain their plants from southern nurseries. By the time the northern growers are ready to plant, the plants at the southern nurseries may be in active growth and not suitable to withstand the shock of shipping and transplanting. Under such conditions it seems likely that plants dug in a dormant state and held in storage until needed might be better than freshly dug plants.

When the plants were stored in crates with the leaves exposed to the air, there was considerable shriveling at 30° F. and much browning of the leaves at 36°. There also was some darkening of the roots at 36°. Because of their appearance, plants stored at 36° would be unsalable. The appearance of plants stored in crates at 32° was better than that of those stored at 36° or 30°. There were some dead leaves and the plants appeared considerably less desirable than freshly dug plants although, from the standpoint of growth, such plants may be equal or superior to freshly dug plants.

Thus, a grower should not judge the desirability of the plants he receives entirely by their appearance. Plants from storage that compare favorably with freshly dug plants may be obtained by storing the plants "in the rough" at 30° to 32° and cleaning them just previous to shipment or setting.

"SPRING FEVER"

IN the city or on the farm, cleaning in the home becomes a "spring fever" with nearly every woman, and each seeks means and aids which will facilitate her work. A chemical cleaner that becomes more thoroughly appreciated each year is Sani-Flush.

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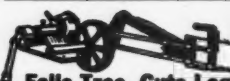
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Because of paper restrictions, AMERICAN FRUIT GROWER'S Annual Directory Number will be published in July instead of June.

WATCH FOR

July 1943 Directory

ISSUE

SOIL MOISTURES

(Continued from page 9)

and leaf growth were markedly curtailed, the bark had a yellowish-orange cast, and the few fruits showed considerable cracking. The same situation prevailed for this tree during the 1942 season except that the limited foliage was a darker green. In the spring of 1942, one year after the flooding treatment, the tree was bedecked with about 3500 blossoms, over 3000 more than the check trees. Only 12 medium to small fruits matured, however. This is a common response by fruit trees which have been weakened by any one of many causes.

Another tree was subjected to a high water table held at 10 inches below the surface during the two growing seasons. The active roots were confined, therefore, to a 10-inch depth, 10 feet square. (The roots were surrounded by 10-foot squares of galvanized sheet iron which were sunk to a 30-inch depth). Shoot growth was excessive, attaining in some cases 40 inches. The leaves were large and succulent and fire blight was more in evidence. The 79 fruits which developed in 1942 were relatively high in water content, large, poorly colored and poorly flavored.

This year, 1943, it is planned to lower the water table from 10 inches to 30 inches the first of July. The resulting situation will be similar to that found in poorly drained orchards. The root system being confined to a limited soil area should not be able to accommodate the water requirement of the top during the drier months of July and August. It would not be surprising if the tree dies.

In the case of the tree which was subjected to a water table 20 inches below the surface, 1941 and 1942, the growth and fruiting could be considered somewhat better than on check trees which received water only from the sky. Evidently, a 10-foot square of soil 20 inches deep under these conditions is adequate to support a 7-year apple tree. In seven more years, however, this tree probably would "find" itself in the same situation as the tree shown in Figure 1.

According to the elaborate experiments at Cornell University, Ithaca, New York, an apple tree should have four feet or more of well-drained soil for proper rooting through the life of the tree. It is suggested that study be made of the ground water table before selecting an orchard site. This could be done by digging about four post holes per acre to a depth of four feet, and placing in them three or four 1-foot tiles one above the other. The height of the table is then recorded throughout the season, espe-

(Continued on page 21)

FOOD FOR VICTORY



Eight million American fighting men are depending upon us for food.

Thirty-five million families working to win at home must be fed.

And our Allies, busy with battle, need all we can add to their food supplies.

So the world is looking to the American farmer.

And to the railroads as well. For this food must be taken where it is needed—must be moved swiftly and constantly to city and seaport.

And along with it, planes, guns, tanks and other war goods to back up American courage on every front.

It adds up to the fabulous total

of a million and a third tons moved a mile every minute, day and night.

To move it, a heavily loaded freight train gets started on its run every four seconds.

It means that 1942 freight movement exceeded that of 1941 by 34%—with very little new or additional equipment.

This was made possible because railroad men—in the offices, in the shops, in the yards, and on the road—have been working to get the most service out of railroad plant, power and equipment—realizing that, while this victory will be won first and above all by fighting men and fighting equipment, these must be backed up by transportation that's doing a fighting job.

Association of
AMERICAN



RAILROADS
Washington D.C.

**THERE'S
NOTHING
BETTER!**



If Nicotine Sulfate is called for in your spray schedule, you will find there's *nothing* better than Orchard Brand!

Orchard Brand enjoys the confidence of growers everywhere because of its uniform spray efficiency—the contents of every package having the same *high purity and potency!*

TWO-WAY ACTION ON FRUITS and VEGETABLES

1. Orchard Brand kills by contacting, or by hitting the insect.
2. Orchard Brand Nicotine Sulfate fumes penetrate the curled leaves, and kill many insects by "gassing" them.

This two-way action gives Orchard Brand Nicotine Sulfate advantages over non-volatile insecticides. Orchard Brand Nicotine Sulfate contains 40% nicotine (expressed as alkaloid).

---A REMINDER---

USE STAFST* HORMONE SPRAY... PAYS BIG DIVIDENDS! ... Plan to use Stafst, the *proven* hormone spray! Controls premature dropping of apples and pears... spreads out the picking season. It holds 'em on the tree longer to give better size and color—and *more money for the crops!*

*Reg. U.S. Pat. Off.

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Montreal • Toronto • Vancouver

APS

CONDUCTED IN THE
INTERESTS OF THE
AMERICAN POMOLOGICAL SOCIETY

MORE FRUIT FOR HOME USE

THE American Pomological Society is fully aware of the fact that in this global war the health and nutrition of our fighting forces and of our civilian population are problems of paramount importance and of serious and primary concern.

For example, the aviator should eat best to fortify himself against such conditions as the sudden temperature drop to 50° F., or more, below zero, and to withstand the strain and fatigue of flying at high altitudes, at the same time maintaining that keenness of mind and alertness required for successful combat duty.

On the other hand, the soldier in a tank, instead of fighting against bitter cold and peculiar mental fatigue, must be able to do hard physical work in the scorching desert sands or on the quagmires of mud flats.

Those on the home front have their problems, too, although not as thrilling and spectacular as the ones mentioned.

FRUIT IN THE DIET

IT now is recognized that fruit, one of the relatively scarce and expensive kinds of foods, must be present in generous amounts in a healthful diet. Many rural and urban families particularly spend a large part of their income for fruit, or more often they do without an adequate diet because they do not grow their own supply.

In 1942 it was our patriotic duty to grow adequate quantities of fruits and vegetables. Now, in 1943, it is necessary. If these foods are not grown, the average family is not likely to have them during present conditions.

The health values and satisfaction in having for home use abundant supplies of fresh, crisp, wholesome fruits from spring until fall, with generous quantities set aside for storage in the fresh state and for canning and preserving, will go a long way toward justifying the establishment and maintenance of fruit plantings. This cannot be emphasized too strongly during the war period.

UNADULTERATED FRUITS AND VEGETABLES

FRUITS and vegetables come to the consumer in their true, complete, natural state, wrapped in Nature's own protective covering. They are not adulterated and they do not require the addition of enriching elements such as is necessary in some other foods. Their vitamin content is well balanced and varied. Their minerals and other characteristics give easily-digested foods for energy in non-fattening form. Apples are particularly fine for bones and teeth and they act as nature's toothbrush. The protective qualities of apples and other fruits are truly remarkable.—T. J. TALBERT, President.

AMERICAN FRUIT GROWER

*I've used them
all, but I get
longer and better
protection with
STAUFFER SULPHURS*



We know that there is a striking difference in sulphurs because we make a lot of them for innumerable purposes—have been for over fifty-five years. And, when it comes to agricultural sulphurs we know that we must produce a grade to fit every need—for every kind of equipment. That is why more fruit growers, from Maine to Texas and from coast to coast, insist on receiving Stauffer Brands from their dealer.

Yes, you get longer and better protection with Stauffer sulphurs because every bagful of sulphur sold under the Stauffer label contains the same high sulphur content and superior adhesive qualities that have gained the favor of fruit growers everywhere.

So plan now to use Stauffer sulphurs for this year's crop protection program. You will have more grade A's and less culls if you keep 'em sprayed and dusted—with Stauffer sulphurs.

STAUFFER SULPHUR PRODUCTS

3-M "MAGNETIC" Micron Measured Sulphur
"MAGNETIC SPRAY" Wettable Sulphur
"CROWN" Brand Wettable Sulphur
"ELECTRIC" Super-Adhesive Dusting Sulphur
"MAGNETIC" Humidust

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PROPAGATION OF PLANTS

By M. G. Kains and L. M. McQuesten—New, fully illustrated volume covering propagation by seeds, layers, grafting and budding. Chapters included on nursery and greenhouse management, also 38-page section on fruit tree stocks. 556 pages of practical information for the commercial plant propagator, the teacher, the student, and the experimenter.

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COLONIAL CHICKS. WORLD'S LARGEST PRODUCTION means lowest prices. Leading breeds. Catalog Free. COLONIAL POULTRY FARMS, Pleasant Hill, Mo. Marion, Ohio.

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FRUIT GRADER—ORCHARD SPRAYER—APPLE barrels. HERBERT HARRISON, Flora, Illinois.

FOR SALE: REBUILT CIDER PRESSES OF ALL sizes. Cider Equipment and Supplies. W. G. RUNKLES MACHINERY COMPANY, 185 Oakland Street, Trenton, New Jersey.

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FRUIT PICKER—GETS FRUIT HARD TO REACH, without climbing trees or slippery ladders, saves time. \$1.25. SCHAEFER MFG. COMPANY, 203 East Berry, Fort Wayne, Indiana.

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DELICIOUS, IMPROVED BLUEBERRIES, GOVERNMENT Hybrids, large as grapes. Two-year plants 2 for \$1.00, 5 for \$2.00; bearing three-year, \$1.00, 3 for \$2.00. All prepaid. GEO. C. MORSE, Williamson, New York.

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ROLLS DEVELOPED—TWO BEAUTIFUL DOUBLE Weight Professional Enlargements, 8 Never Fade Deckle Edge Prints, 25c. CENTURY PHOTO SERVICE, La-Crosse, Wis.

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PRODUCE EARLY VEGETABLES. USE OPEN FIELD-grown plants. Tomato, Pepper, Eggplant, Broccoli \$1.50—500; \$2.50—1000. Tomatoes 5000 \$11.00. Cabbage, onion, collard 500 \$1.25, 1000 \$2.00. Mosspacked. Not prepaid. COLONIAL PLANT FARM, Rebecca, Georgia.

MILLIONS CERTIFIED IMPROVED RED, PINK portoricans potatoes, 1000—\$1.60. Tomatoes, sweet and hot peppers \$1.30. Cabbage 80c. DANIEL'S, Tyty, Ga.

POULTRY

PEAFOWL, PHEASANTS, SWANS, BANTAMS, WATERFOWL, Thirty Varieties Pigeons, JOHN HASS, Bettendorf, Iowa.

SONGWRITERS

SONGWRITERS. WRITE FOR FREE BOOKLET. Profit Sharing Plan. ALLIED MUSIC, Dept. 58, 204 East Fourth, Cincinnati, Ohio.

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FULL POUND BLEND OF FIVE TOBACCOS. ONLY \$1.25. Send for Free Catalog and trial offer. SIDNEY RAM, T12, 59 West Monroe, Chicago, Illinois.

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WANTED SPRAYERS, CLEANERS, EQUIPMENT, Orchard supplies. Give age, condition. CORY ORCHARDS, Clay County, Cory, Indiana.

WANTED ORIGINAL SONG POEMS. FIVE STAR MUSIC MASTERS, 716 Beacon Building, Boston, Mass.

SOIL MOISTURES

(Continued from page 19)

cially in April and May and after rains.

The important thing is the depth to which a water table is able to recede within a few days after a rain. Some good fruit soils fill with ground water to within a few inches of the surface after very heavy rains, but in the course of an hour or two the water falls rapidly and in a day or two will be back to the level obtaining before the rain. Readings could be taken at 3-day intervals.

If the ground water persists within a foot or two of the surface during the critical blossoming and fruit setting period, many small feeding roots die and tree suffers accordingly.

STATE NEWS

(Continued from page 14)

INDIANA—The managers and directors of the cooperative marketing associations of this State met at Lawton Beaty's near Paoli last month for a discussion of current problems which face the industry. Marketing of the present crop received greatest emphasis. Representatives of the research and extension staffs of the Purdue University Agricultural Experiment Station took part in this conference which is a semi-annual occasion and which brings together the leaders of the industry in various areas.

Lawton Beaty, host at this last meeting, is Secretary of the Orange County Berry Growers' Association.

In cooperation with both the chain and independent distributors of fruits and vegetables in Indiana, the Purdue University Agricultural Experiment Station is providing a special wartime marketing service. This program, which has been approved by the distributors, calls for a state-wide market news service which will provide information to the dealers and to the consumers on the sources of Indiana crops.

A special calendar, indicating for each crop the approximate harvest date in southern, central, and northern Indiana and the week when the supply of the individual crop will be at its peak, will be published and distributed to consumers.

There will be greater utilization of local supplies of fruits and vegetables in order to reduce transportation requirements and costs.

There will be provision for the handling of "Utility," or second grade as well as top grades by all distributors, strictly as a wartime measure.—MONROE McCOWN, Sec'y., Lafayette.

COLORADO—A. J. Hamman, Soil Conservationist, Colorado Agricultural College Extension Staff, has been assigned to temporarily discontinue his work on the staff and to become labor agent for the Extension Service. This happens in connection with the labor recruiting program in which the extension services are participating.

NEVADA—E. A. Settelmeyer, Chairman of The Nevada State U.S.D.A. War Board has announced that all County U.S.D.A. War Boards in this State are directed to initiate requests for further deferment of all essential farm and orchard workers.

Reason for the intensified efforts in regard to deferment is the extreme need for more agricultural workers in Nevada this year.

Mr. Settelmeyer also pointed out that it will be the duty of County War Boards to appeal for justifiable deferment of persons previously denied reclassification into essential deferment classes.

NEBRASKA—The fruit growing business throughout this State is "looking up" although most of the older growers are not interested in replanting the orchards which were destroyed by the 1940 freeze. A new crop of younger men will have to be developed. This is slow work in times like these, when such profitable returns are secured from the ordinary field crops and livestock. But there are a few who are planting this year on a commercial scale and some of the younger men are increasing their plantings.

Nurserymen in Western Iowa and in Nebraska have their stocks of small fruits, cherries and early apples well disposed of already and there still is a steady demand which probably will last a few more weeks.—E. H. HOPPERT, Sec'y, Lincoln.

A FIFTH COLUMN ... Boring From Within Can Wreck Crops Vital To Victory!



Battle Bugs and Blight With Corona!

SABOTAGE by a subtle "Fifth Column" of destructive insects and blight can materially reduce your crop yield... robbing our armed forces and defense workers of foods vital to victory! Guard against this by systematic treatment with Corona sprays and dusts. Insects and blight are effectively and quickly checked by these Corona Products. Furthermore healthier skin texture and undamaged foliage are assured. For tree wounds, use Corona Tree Wound Dressing—longer lasting protection. Complete information about Corona Crop Protection Plan on request. Corona Chemical Division, Pittsburgh Plate Glass Company, Milwaukee, Wis.

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CORONA DRY Arsenate of Lead • Corona Calcium Arsenate • Corona Bordeaux Mixture (Dry) • Corona Coppercarb • Corona 50% Plus • Corona Tree Wound Dressing • Corona Dust #50 (containing 1/2% Rotenone) • Corona Dust 40-20 (containing 4% Rotenone and 2% Lethane*) • Corona Fungicide Dust (containing Cuprocid*) • Corona Micronized Dusting Sulfur • Corona Micronized Wettable Sulfur

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3 Braid — Any Length — Any Pressure to 1000 lbs.
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 $\frac{1}{2}$ " - $\frac{7}{16}$ " - $\frac{1}{2}$ " and $\frac{3}{4}$ " High Pressure Couplings
PROMPT SERVICE — LOW PRICES
Write for Free Sample
BROADWAY RUBBER MFG. CO.
Manufacturers and Engineers since 1903
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"SUGAR-SYRUP"

IN Michigan the apple growers and dairy plant operators are discussing possibilities in the wartime industry of making apple syrup. This follows the recently introduced use of sugar-syrup in the place of glycerine in the manufacture of tobacco. This syrup can be made from wholesome but low-grade apples such as those which are used for cider or vinegar.

The dairy plant equipment would be used in fall months to condense the juice to a 75 per cent solid syrup.

10 SOUND REASONS FOR USING

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Bordeaux mixtures which effectively control fungous diseases depend on the elimination of guesswork and haphazard methods of determining the amount of Copper Sulfate in the spray mixture. Nichols Triangle Brand "Instant" Copper Sulfate gives you these 10 advantages:

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9. **MODERN PACKAGES** . . . Special packages safeguard quality. At no extra cost you receive the best in modern packaging.
10. **PRODUCED IN 3 LARGE PLANTS** . . . Your dealer can always supply you because of three strategically located plants.

ASK YOUR DEALER for Nichols Triangle Brand "Instant" Copper Sulfate today. He also carries **LARGE AND SMALL CRYSTAL** and **SUPER-FINE NICHOLS COPPER SULFATE** for **STANDARD BORDEAUX**, and **MONOHYDRATED** for copper lime dusts.

Spray Chemicals Scarce?

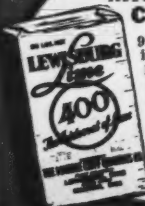
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NOW it is more important than ever to make each mixture as powerful as possible.
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99.57% pure Calcium Hydroxide. 99.5% guaranteed to pass through 400 mesh screen. Stays in suspension longer. Covers more thoroughly. Write for prices.

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MARKETING



NO RATION POINTS ARE NEEDED AT ROADSIDE FRUIT MARKET

ONE advantage blesses the fruit grower at his roadside market this coming season and that is he will require no ration points for the fresh fruits and other fresh foodstuffs which are the products he has to sell at his stand. And with the grocer demanding a certain number of ration points for every can of fruit and vegetable he sells, the demand for the fresh is going to swell beyond the supplies of his shelves and then the roadside market is going to be of greater importance than ever.

This may not seem likely in view of present tire and gasoline rationing, but, since the first aim of every man is self-preservation, and since "where there is a will, there is a way," no man is going without until the fruit grower ceases to grow his fruits and the farmer his crops.

When gas and tire shortages were still only rumors, sensible persons pooled their resources and visited roadside markets all through last summer and even through the winter. This year others will conserve their allotment of gas and use it on summer evenings, or on Sundays, to drive out along the highways where the roadside markets are located. And each car, undoubtedly, will carry as many individual customers as it can.

As a substantiation for this optimistic viewpoint, there are the words of Ivan T. Quick, who operates a large roadside market in connection with the Quick Fruit Farms in Summit County, Ohio. He says,

"We can only judge the future by the past and last fall and winter I was agreeably surprised, after tire and gasoline rationing went into effect, at the amount of business done at our retail market. In fact, sales during the past winter averaged, possibly, 50 per cent higher than they did during any previous winter in our market's history.

"We made a special effort to induce our customers to buy for their neighbors in order to conserve motor traveling and I think this, coupled with the fact that people probably are more food conscious today than ever before, was mainly responsible for this increase in business.

"We certainly expect to keep the market open all next year if we have any kind of a crop. Whether we will be able to keep it open daily during harvest time is a question because it takes considerable labor to pack and present the fruit. But we shall endeavor to keep the market open during harvest time at least over the weekends.

"We know there will be a tremendous demand for all types of good fruits and we intend to be on the job to provide it."

Honey, another favorite product at the roadside market, is bound to be a "best seller" this coming season because of sugar rationing. The housewife already is learning the multiple uses of honey in the place of sugar. No ration points will be required for honey.

And thousands of women who never canned fruit for the consumption of their own families, because fruit always was available in cans, will can peaches, plums and other fruits this year. In the 1942 season housewives were allowed allotments of sugar on the basis of one pound for each four quarts of fruit that were to be canned, and the government has announced that the same will be granted this year without an exchange of sugar ration points. The working woman who has not the time to do her own canning oftentimes can find home canned fruits and jellies at the roadside stand.

A prominent fruit grower and proprietor of successful roadside markets, John E. Rice, Marlboro, Massachusetts, who sells considerable home canned fruits, jellies and fruit juices, has this to say:

"People are using more jellies today instead of butter. They are using more fruit juices because they are palatable and healthful and not rationed, like coffee.

"Furthermore, my roadside markets are open 365 days in the year, rain or shine, winter and summer, depression or no depression, and I think it is a mistake to close. If you have regular trade, the public expects you to be open for your regular customers.

"Since rationing, the business on the roadside stands has about doubled over the figures of last year. Where people used to buy a gallon of grape juice or cider, they now are buying two or three gallons and, sometimes, half a dozen for their neighbors. Many of these customers are not using their cars during the week, but are saving their gasoline for weekend trips into the country.

"I would say that people are buying at roadside stands to save points and that offsets any inconvenience incurred by the use of their gasoline for this purpose.

"In congested areas a roadside market does not need a great number of customers to make it profitable, and the weekend business brings the sales up into a large territory. I know that business would be greater if it were not for the tire and gas rationing; yet, if we had free use of tires and gas, labor would not have its present earning power and its purchasing power then would be less, so one balances the other."

MAY, 1943



At Your Service TO KEEP TRUCKS IN SERVICE



Our Government has asked America's farms and factories to produce record breaking quantities of food and fighting equipment this year. This means that the motor trucks now on the job must work harder and longer than ever before to keep war loads moving. The entire General Motors Truck dealer organization is at your service to keep your trucks in service. Skilled Parts Men, Master Mechanics, Modern Equipment and Proved Preventive Maintenance Methods all combine to conserve your truck, your time and your money.

Special "Service Payment Plan" available through our own YMAC

INVEST IN VICTORY...BUY
WAR BONDS AND STAMPS



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THE TRUCK OF VALUE

GMC TRUCKS

GASOLINE-DIESEL

AMERICAN FRUIT GROWER

PAGE 23

Protect Your Crop Against the Fury of

HAIL

IT DOESN'T PAY to take chances with hail anywhere in the United States. The fact that there has not been a hailstorm in your community recently is no assurance that there will not be one at any unexpected time.

When such disaster comes, the attack is so sudden and furious that your fruit crop may be ruined in a few minutes.

Most fruit growers realize this, so the *important* thing is to buy protection from a sound capital stock company whose risks are widely distributed and whose ability to pay losses will not be affected by any hailstorms covering either wide or local areas.

The companies named below are represented by resident local agents who are capable of advising fruit growers wisely concerning proper coverage. You are then sure of absolute protection—known premium charge—freedom from assessments and pro-rated losses—just and fair treatment—prompt payment of loss.



The AETNA FIRE GROUP
NORTH AMERICA COMPANIES
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